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Talc

Mineral Data



Pronunciation Guide



Rare Minerals, Meteorites, Equipment and Analytical Services
World leaders in the supply of rare species
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General Talc Information

Chemical Formula: $\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$

Composition: Molecular Weight = 379.27 gm

| | | | | |
|------------------|---------|----|---------|----------------------|
| <u>Magnesium</u> | 19.23 % | Mg | 31.88 % | MgO |
| <u>Silicon</u> | 29.62 % | Si | 63.37 % | SiO_2 |
| <u>Hydrogen</u> | 0.53 % | H | 4.75 % | H_2O |
| <u>Oxygen</u> | 50.62 % | O | | |

 100.00 %

 100.00 % = TOTAL OXIDE

Empirical Formula: $\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$

Environment: Hydrothermal alteration of non-aluminous magnesian silicates.

IMA Status: Valid Species (Pre-IMA) 1546

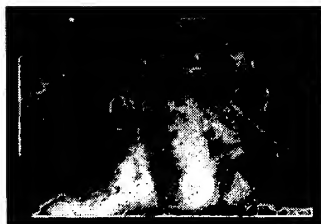
Locality: Common world wide. Link to MinDat.org Location Data.

Name Origin: From the Arabic.

Synonym:
 Kerolite
 Magnesium Talc
 Soapstone
 Steatite - massive

Talc Image

Images:



Talc

Comments: White Talc pseudomorphous after quartz.
Location: Johannezeche, Bavaria, Germany. **Scale:** Not Given.
 © Lou Perloff / Photo Atlas of Minerals

Talc Crystallography

Axial Ratios: a:b:c = 0.5778:1:2.0668

Cell Dimensions: a = 5.27, b = 9.12, c = 18.85, Z = 4; beta = 100.016° V = 892.17 Den(Calc) = 2.82

Crystal System: Monoclinic - Prismatic H-M Symbol (2/m) Space Group: C 2/c

X Ray Diffraction: By Intensity(I/I_0): 9.35(1), 1.53(0.55), 4.59(0.45).

Physical Properties of Talc

- Cleavage:** [001] Perfect
- Color:** Pale green, White, Gray white, Yellowish white, Brownish white.
- Density:** 2.7 - 2.8, Average = 2.75
- Diaphaniety:** Translucent
- Fracture:** Uneven - Flat surfaces (not cleavage) fractured in an uneven pattern.
- Habits:** Foliated - Two dimensional platy forms., Scaly - Morphology like fish scales., Massive - Uniformly indistinguishable crystals forming large masses.
- Hardness:** 1 - Talc
- Luminescence:** Fluorescent.
- Luster:** Vitreous - Pearly
- Streak:** white

Optical Properties of Talc

- Gladstone-Dale:** $Cl_{meas} = 0.018$ (Superior) - where the $Cl = (1 - KPD_{meas}/KC)$
 $Cl_{calc} = 0.042$ (Good) - where the $Cl = (1 - KPD_{calc}/KC)$
 $KPD_{calc} = 0.2028, KPD_{meas} = 0.208, KC = 0.2117$
- Optical Data:** Biaxial (-), $a = 1.538 - 1.55$, $b = 1.575 - 1.594$, $g = 1.575 - 1.6$,
 $bire = 0.0370 - 0.0500$, $2V(Calc) = 0 - 38$, $2V(Meas) = 0 - 30$.
Dispersion noticeable, $r > v$.
- Pleochroism (x):** colorless.
- Pleochroism (y):** pale green.
- Pleochroism (z):** pale green.

Calculated Properties of Talc

- Electron Density:** $\rho_{electron} = 2.76$ gm/cc
note: $\rho_{Talc} = 2.75$ gm/cc.
- Photoelectric:** $PE_{Talc} = 1.57$ barns/electron
 $U = PE_{Talc} \times \rho_{electron} = 4.34$ barns/cc.
- Radioactivity:** **GRapi = 0** (Gamma Ray American Petroleum Institute Units)

Talc is **Not Radioactive**

Talc Classification

- Dana Class:** **71.2.1.3 (71)** Phyllosilicate Sheets of Six-Membered Rings
(71.2) with 2:1 Layers
(71.2.1) Pyrophyllite-talc group
 - 71.2.1.1 Pyrophyllite $Al_2Si_4O_{10}(OH)_2 P \bar{1} 1$
 - 71.2.1.2 Ferripyrophyllite $Fe_2Si_4O_{10}(OH)_2 C 2/m 2/m$

71.2.1.3 Talc $\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$ C 2/c 2/m

71.2.1.4 Willemseite (Ni,Mg) $3\text{Si}_4\text{O}_{10}(\text{OH})_2$ C 2/c 2/m

71.2.1.5 Minnesotaite (Fe,Mg) $3\text{Si}_4\text{O}_{10}(\text{OH})_2$ $\text{C}\bar{1}$ $\bar{1}$

71.2.1.6 Brinrobertsilei (Na,K,Ca) $x(\text{Al,Fe,Mg})_4(\text{Si,Al})_8\text{O}_{20}(\text{OH})_4 \cdot 3.54(\text{H}_2\text{O})$
[$x=0.35, n=3.54$] pseudo 2/m 2/m

Strunz Class:

VIII/H.09-40 VIII - Silicates

VIII/H - Phyllosilicates (layered) Mica like layered silicates with $[\text{Si}_4\text{O}_{10}]^{4-}$ and related groups

VIII/H.09 - Talc series

VIII/H.09-10 Pyrophyllite $\text{Al}_2\text{Si}_4\text{O}_{10}(\text{OH})_2$ $\text{P}\bar{1}$ $\bar{1}$

VIII/H.09-20 Ferripyrophyllite $\text{Fe}_2\text{Si}_4\text{O}_{10}(\text{OH})_2$ C 2/m 2/m

VIII/H.09-30 Macaulayite (Fe,Al) $_{24}\text{Si}_4\text{O}_{43}(\text{OH})_2$ C? Mono

VIII/H.09-40 Talc $\text{Mg}_3\text{Si}_4\text{O}_{10}(\text{OH})_2$ C 2/c 2/m

VIII/H.09-50 Minnesotaite (Fe,Mg) $3\text{Si}_4\text{O}_{10}(\text{OH})_2$ $\text{C}\bar{1}$ $\bar{1}$

VIII/H.09-60 Willemseite (Ni,Mg) $3\text{Si}_4\text{O}_{10}(\text{OH})_2$ C 2/c 2/m

VIII/H.09-65 Pimelite* $\text{Ni}_3\text{Si}_4\text{O}_{10}(\text{OH})_2 \cdot 4(\text{H}_2\text{O})$ Unk. Hex

VIII/H.09-70 Kegelite $\text{Pb}_8\text{Al}_4\text{Si}_8\text{O}_{20}(\text{SO}_4)_2(\text{CO}_3)_4(\text{OH})_8$ A2/m, A2, Am Mono

Other Talc Information

References:

NAME(Duda&Rejl90) PHYS. PROP.(Enc. of Minerals,2nd ed.,1990) OPTIC PROP.(Heinrich65)

See Also:

Links to other databases for Talc :

1 - [Applied Mineralogy](#) 2 - [Athena](#) 3 - [Crocoite.com](#)
Mineral Locations 4 - [EUROmin Project](#) 5 - [Franklin Minerals\(Dunn\)](#) 6 - [Franklin Minerals\(Palache\)](#) 7 - [Glendale Community College](#) 8 - [Google Images](#) 9 - [Handbook of Mineralogy](#) 10 - [MinDAT](#) 11 - [MinMax \(Deutsch\)](#) 12 - [MinMax\(English\)](#) 13 - [Minerals in Thin Section-University of North Carolina](#) 14 - [Minerals in Thin Sections-Humboldt State](#) 15 - [Minerals of Wisconsin](#) 16 - [Scandinavian mineral gallery](#) 17 - [The Mineral Gallery](#) 18 - [UCLA - Petrography Thin-Sections](#) 19 - [University of Manchester - Mineral Structure](#) 20 - [University of Minnesota](#) 21 - [WWW-MINCRYST](#) 22 - [YupRocks](#) 23 - [École des Mines de Paris](#)

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| |
|--|
| <p style="text-align: center;">Talc</p> <p>Mg₃Si₄O₁₀(OH)₂ Dana No: 71.2.1.3 Strunz No: VIII/H.09-40</p> <p>Locality:</p> <p>Notes:</p> |
|--|

Print this Label

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